



ÁGWA-KULTURA: THE LOS BAÑOS AQUACULTURE LIVELIHOOD AND COMMUNITY LEARNING CENTER

Project Background

The Philippines, being the world's second-largest archipelagic state, is considered a major fishing nation. Communities, especially those who live near lakes, rely on fisheries through small-scale fishing as their primary source of income and livelihood. However, fisherfolk still remain as one of the most poverty-stricken sectors in the country. This may be attributed to the constant environmental degradation that result to a decline in yield and fisheries development.

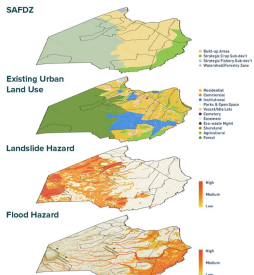
Laguna de Bay, the Philippines' largest lake and one of the main sources of income, livelihood, and food for people in surrounding areas, is constantly faced with issues of degradation due to population growth and urbanization. The increase of unwanted developments in areas surrounding the lake eventually caused lake overcrowding. To minimize its effects, it is important to improve or innovate based on the current aquaculture methods that only harm the lake.

Significance

This project aims to provide a sustainable approach in the fishing industry, such that the availability of fish for future generations is ensured, income and livelihood of fisherfolks is secured, and natural resources are protected. Through integrating modern and sustainable methods, such as land-based aquaculture and aquaponics, damages made on the lake will not only be reduced, but fisherfolk will also be encouraged to learn and practice a more productive livelihood. Consequently, this may boost fish production, therefore providing the nutritional needs of the community.

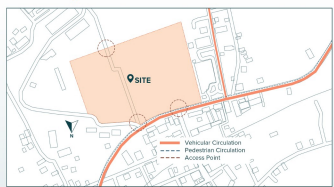
The goal of this project is to develop an urban land-based aquaculture facility in Los Baños, Laguna that would provide a sustainable means of fish production that would empower local fisherfolk, and serve as a catalyst for community and fisheries development.

Macroanalysis of the Site



Los Baños is a 1st class municipality in the province of Laguna. In a 2020 census, it recorded a population of 115,353 inhabitants, with a population density of 2,100 persons/sq. km. Its industry is mainly agricultural-based, and it houses several local and international research centers, universities, and other academic- and science-related institutions. Aside from this, it is also a well-known tourist destination because of its hot spring resorts and lush nature, which is why it was declared as the "Science and Nature City" of the Philippines. Los Baños is divided into 14 barangays, and the site is located in Barangay Timugan.

Microanalysis of the Site



The development is located on a 5.1-hectare lot along Manila S Road in Brgy. Timugan, Los Baños, Laguna. It is around 0.5 km away from Laguna de Bay, and is surrounded by residential and institutional areas. The site was chosen because it provided room for expansion, it is accessible by walking, biking, and to public transport systems. It is also near local community facilities.

User Analysis



Fisherfolk

The main users of the site will be the fisherfolk who will use the development for livelihood training, income generation, participatory planning, and temporary housing. Since the project focuses on aquaculture and aquaponics training and production, they will benefit from the cultivation of fish species and growth of plants and other greens.



Students, Researchers & Industry Experts

The project will include a research and development building where students, researchers, and industry experts can practice and fulfill academic and/or research-related work. They will be using the site mainly for the innovation of systems for productivity, assessment, and evaluation of the fish produced from aquaculture.



Tourists/Visitors

The last of the primary users would be the tourists or guests who will use the site for community learning. The development will include interactive areas which they can use for aquaculture education or industry awareness. They will influence how the space will be designed in order to maximize their experience.



Management Staff

The management staff will ensure smooth and efficient operations on-site. They will be overseeing the activities held within the development, and will supervise the maintenance of the facilities.



Locals

The development will provide a new attraction for visitors, especially within the communal and educational areas, such as the wet market, food bazaar, co-working spaces, interactive workshops, and plaza. With the increase in tourists within the area, nearby businesses can also benefit; thus, the economy of the area will also be positively affected.

Industry Analysis



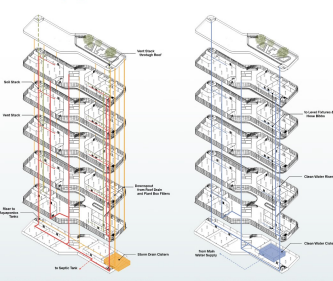
The major fish species that will be cultivated in the development are the top 3 freshwater fishes which are also greatly produced in Laguna de Bay. These are Bangus, Tilapia, and Carp. The most fish species produced in the lake is Bangus, while the species with the fastest annual growth rate is Carp.



One of the known systems in aquaculture is aquaponics which integrates aquaculture and hydroponics through the symbiosis of fish and plants. This is generally a new practice in the Philippines, and has only been popularized during the COVID-19 pandemic to boost food production, especially in urban areas. Most aquaponics systems focus on small- to medium-scale aquaponics for education and/or food security interventions.



Plumbing System



The utilities for this project solely focuses on the main Research and Development building because it houses the most specialized equipment, and will be the most used building among the others in the development.

The development will utilize a recirculating water system where storm water will be filtered in plant boxes and bioswales, and reused for the aquaculture ponds and tanks; clean water will be delivered to support spaces; and wastewater will be treated in the sewage treatment areas for recirculation.

Design Concepts



Interdependence

The project aims to show the interdependence of the fisherfolk and the community by introducing the community to aquaculture, while fisherfolks enhance their livelihood and produce food.



Symbiosis

Symbiosis refers to the ability of man and nature to exist together in harmony. It aims to forge a balance between the built and unbuilt environment in creating a non-massive, human-scale development.



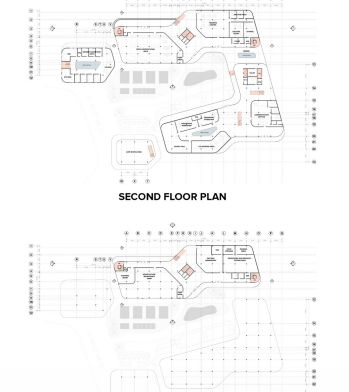
Flexibility

A flexible program will allow the users of the site to personalize the spaces according to their specific needs. It aims to maximize connectivity, foster collaboration, and facilitate movement for a more efficient workflow.

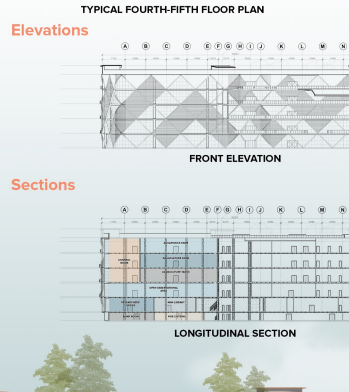
Floor Plans



GROUND FLOOR PLAN ON SITE

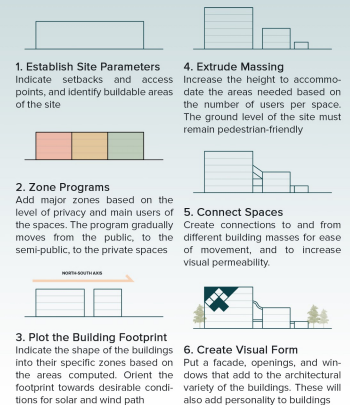


SECOND FLOOR PLAN



TYPICAL FOURTH-FIFTH FLOOR PLAN

Design Development



1. Establish Site Parameters

Indicate setbacks and access points, and identify buildable areas of the site

2. Zone Programs

Add major zones based on the level of privacy and main users of the spaces. The program gradually moves from the public, to the semi-public, to the private spaces

3. Plot the Building Footprint

Indicate the shape of the buildings into their specific zones based on the areas computed. Orient the footprint towards desirable conditions for solar and wind path

4. Extrude Massing

Increase the height to accommodate the areas needed based on the number of users per space. The ground level of the site must remain pedestrian-friendly

5. Connect Spaces

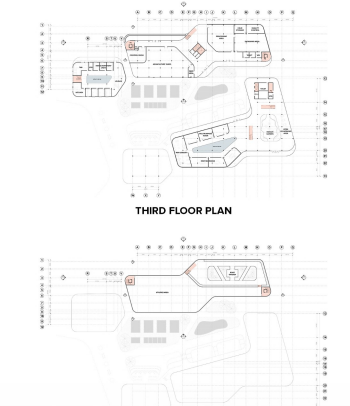
Create connectors to and from different building masses for ease of movement, and to increase visual permeability.

6. Create Visual Form

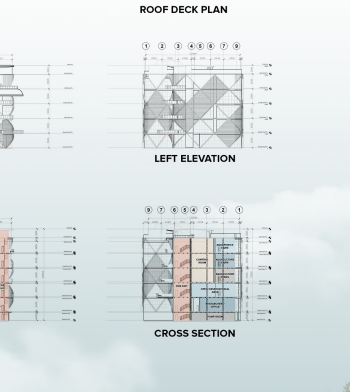
Put a facade, openings, and windows that add to the architectural variety of the buildings. These will also add personality to buildings



BASEMENT PLAN

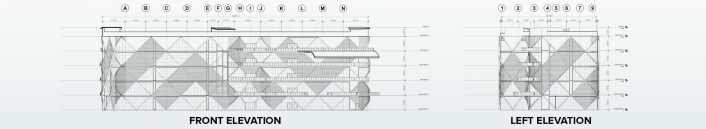


THIRD FLOOR PLAN



ROOF DECK PLAN

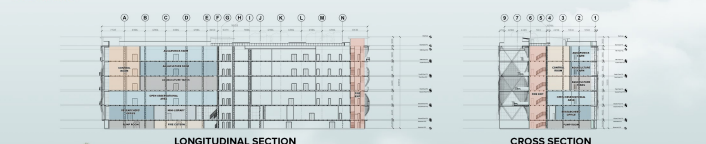
Elevations



FRONT ELEVATION

LEFT ELEVATION

Sections



LONGITUDINAL SECTION

CROSS SECTION

